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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,154	09/11/2003	Richard Wiss	SYB/0092.01	2153
31779	7590	08/23/2006	EXAMINER	
JOHN A. SMART 708 BLOSSOM HILL RD., #201 LOS GATOS, CA 95032-3503			PHAM, KHANH B	
			ART UNIT	PAPER NUMBER
			2166	

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/605,154

Applicant(s)

WISS ET AL.

Examiner

Khanh B. Pham

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. The amendment filed May 3, 2006 has been entered. Claims 1, 17, 18, 30, 43 have been amended. Claims 1-43 are pending in this Office Action.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1-8, 10-23, 25-32, 34-43** are rejected under 35 U.S.C. 102(e) as being anticipated by Shih et al. (US 6,615,223 B1), hereinafter "Shih".

**As per claims 1, 16-17**, Shih teaches a method and computer readable medium for replicating a transaction from a primary database to a replicate database while the replicate database remains available for use (Col. 9 lines 15-42), the method comprising:

- "recording information about a transaction being performed at a primary database in a transaction log" at Col. 9 lines 15-25 and Fig. 3;

- “synchronously copying the information about the transaction in the transaction log to a mirrored transaction log, so as to create at the replicate database an exact copy of the transaction log” at Col. 9 line 28 to Col. 10 line 8 and Fig. 3;
- “generating a reconstructed transaction based on the information about the transaction copied to the mirrored transaction log” at Col. 10 lines 10-45;
- “applying the reconstructed transaction at the replicate database while the replicate database remains available for use” at Col. 9 lines 28-42.

**As per claim 2**, Shih teaches the method of claim 1, wherein “said transaction includes a selected one of a Structured Query Language ‘INSERT’, ‘UPDATE’, ‘DELETE’, ‘DDL’, AND ‘Procedure’ operation” at Col. 10 lines 20-40.

**As per claim 3**, Shih teaches the method of claim 1, wherein “said recording step includes recording at least one log record about the transaction in the transaction log” at Col. 9 lines 15-25.

**As per claim 4**, Shih teaches the method of claim 3, wherein “said at least one log record characterizes changes made to the primary database in the transaction” at Col. 9 lines 15-25

**As per claim 5**, Shih teaches the method of claim 1, wherein "said synchronously copying step includes using a file mirroring module" at Fig. 1, element 40.

**As per claim 6**, Shih teaches the method of claim 1, wherein "said synchronously copying step includes using file replication hardware" at Fig. 3, elements 316, 320.

**As per claim 7**, Shih teaches the method of claim 1, wherein "said synchronously copying step includes using file replication software" at Col. 9 lines 42-44.

**As per claim 8**, Shih teaches the method of claim 1, wherein "said synchronously copying step includes synchronously copying information to the transaction log and the mirrored transaction log before completing the transaction at the primary database" at Col. 1 lines 25-35.

**As per claim 10**, Shih teaches the method of claim 1, further comprising:  
"copying database schema information from the primary database to a site at which the mirrored transaction log is located to enable transactions to be reconstructed and applied at the replicate database" at Col. 1 lines 53-65.

**As per claim 11**, Shih teaches the method of claim 10, wherein "said generating step includes generating the reconstructed transaction based, at least in part, on said database schema information" at Col. 10 lines 9-45.

**As per claim 12**, Shih teaches the method of claim 1, wherein “said generating step includes formatting the reconstructed transaction so that the reconstructed transaction is in the same format as the transaction at the primary database” at Col. 10 lines 20-40.

**As per claim 13**, Shih teaches the method of claim 1, wherein “said applying step includes verifying that the transaction ordering is correct” at Col. 22 line 55 to Col. 23 line 3.

**As per claim 14**, Shih teaches the method of claim 1, wherein “said applying step includes applying the reconstructed transaction at the replicate database in the same order as the transaction order at the primary database” at Col. 14 lines 13-23.

**As per claim 15**, Shih teaches the method of claim 14, further comprising: “responding to a database query at the replicate database while a transaction is being replicated from the primary database to the replicate database” at Col. 9 lines 30-40.

**Claims 18-23, 25-32, 36, 39-43** recite a method and a system for performing similar method as in claims 1-15 discussed above and therefore rejected by the same reasons.

**As per claim 37**, Shih teaches the method of claim 35, further comprising:

- “tracking modifications to said database schema information at the first database” at Col. 9 lines 28-41;
- “constructing a replicate operation based on said database schema information in effect when the operation is performed at the first database” at Col. 8 lines 55-67.

**As per claim 38**, Shih teaches the method of claim 30, further comprising:

- “assigning a unique identifier to database objects at the first database” at Col. 12 lines 50-67;
- “if a database object is modified, assigning a different unique identifier to the database object that is modified” at Col. 12 lines 50-67;
- “determining a particular database object to be used in constructing a replicate operation based upon said unique identifier assigned to said particular database object” at Col. 10 lines 10-40.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 9, 24 and 33** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Shih** as applied to claims 1-8, 10-23, 25-32, 34-43 above, and in view of Riedel et

al. ("When Local Becomes Global: An Application Study of Data Consistency in a Network World"), hereinafter "**Riedel**"

**As per claims 9, 24, 33**, Shih teaches the method and system of claim 1, 18, 30 discussed above. Shih teaches the step of synchronously copying the information about the transaction log to the mirrored transaction log at Col. 9 lines 28-60, but does not explicitly teach: "said synchronously copying step includes replicating at a file block level" as claimed. However, Riedel discussed at page 268, section 2.4 the advantage of replicating at file block level versus file level. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Riedel with Shih's teaching as suggested by Riedel because "a successful system for global data placement should operate at the lowest-level of these interfaces in order to provide the maximum compatibility with existing applications" (Riedel, page 268).

### ***Response to Arguments***

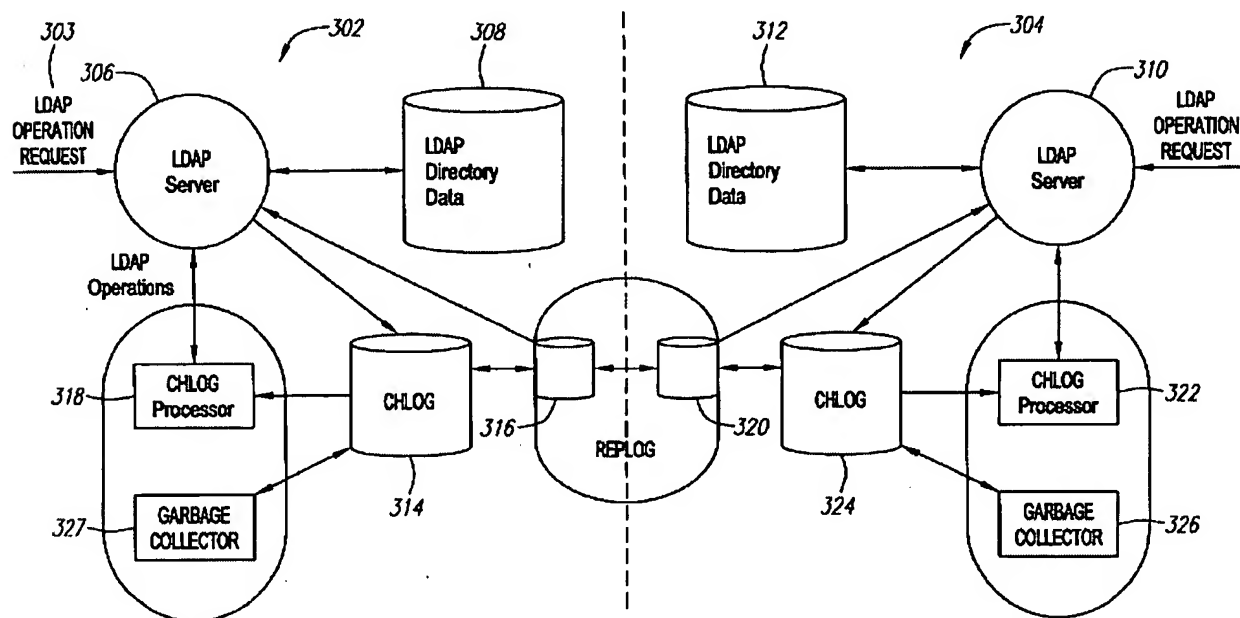
6. Applicant's arguments filed May 3, 2006 have been fully considered but they are not persuasive. The examiner respectfully traverses applicant's arguments.

Regarding the 35 U.S.C 102(e) rejection to claims 1, 16, and 17, applicant argued that Shih's system does not have an exact copy of the log at replicate sites. On the contrary, Shih teaches at Fig. 3 and Col. 9 line 28 to Col. 10 line 8 the process of copying entries from change log 314 to change log 324 as follows:



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- a) Change log entries from change log **314** are copied to a replication log **316** using either asynchronous or synchronous replication. (Col. 9 lines 42-54)
- b) The change log information copied to the replication log **316** is propagated to the replication log **320** at remote site 304. (Col. 9 lines 55-57)
- c) At the remote site 304, the change log entry in replication log **320** can be copied to change log **322** asynchronously or synchronously. (Col. 9 line 61 to Col. 10 line 8).

**FIG. 3**

As seen from the steps above, the change log 324 at the remote site 304 contains exact copy of the change log 314 at the LDAP site 302.

Regarding the 35 U.S.C 103(a) rejection to claims 9, 24 and 33, in response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or

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modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Shih teaches the step of synchronously copying the information about the transaction log to the mirrored transaction log at Col. 9 lines 28-60, but does not explicitly teach: "said synchronously copying step includes replicating at a file block level" as claimed. However, Riedel discussed at page 268, section 2.4 the advantage of replicating at file block level versus file level. Particularly, Riedel teaches that:

"in most system today, there is already a common interface to storage - applications are written against file open close, read, write interface at the file system level, which translates into a set of lower-level block request"

"At the block level, remote mirroring across disk arrays connected by a wide-area link provides replication of all write operations by applications at a primary node to a second backup node"

and

"We believe that a successful system for global data placement should operate at the lowest level of these interfaces

in order to provide the maximum compatibility with existing application"

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine Riedel with Shih's teaching as suggested by Riedel because "a successful system for global data placement should operate at the lowest-level of these interfaces in order to provide the maximum compatibility with existing applications" (Riedel, page 268).

In light of the foregoing arguments, the 35 U.S.C 102 and 103 rejections are hereby sustained.

### ***Conclusion***

d) **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh B. Pham whose telephone number is (571) 272-4116. The examiner can normally be reached on Monday through Friday 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Khanh B. Pham  
Examiner  
Art Unit 2166

August 15, 2006

